



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): Watkins

SERIAL NO.: Not yet assigned GROUP NO.: Not yet assigned

FILING DATE: Herewith EXAMINER: Not yet assigned

TITLE: Materials and Methods for Detection and Treatment of Breast
 Cancer

Box PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

SUBMISSION OF PAPER COPY AND/OR COMPUTER READABLE COPY
OF SEQUENCE LISTING FOR INVENTION
CONTAINING NUCLEOTIDE AND/OR AMINO ACID SEQUENCE

Sir:

1. ☐ This replies to the Patent Office Letter dated

Note: If these papers are filed before the office letter issues adequate identification of the original papers should be made, e.g., in addition to the name of the inventor and title of invention, the filing date based on the "Express Mail" procedure, the serial number from the return post card or the attorney's docket number added.

- ☐ A copy of the Patent Office Letter is enclosed.

2. Submitted herewith is/are
(check each item as applicable)

- A. ☒ a paper copy of the Sequence Listing for this application with each sequence assigned a separate identifier.
- B. ☒ a copy, in computer readable form, of the Sequence Listing for this application.

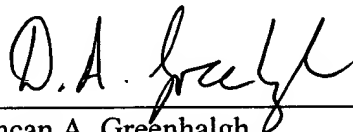
STATEMENT

3. I hereby state that:

(complete applicable items A, B and/or C)

- A. ☒ the content of the paper and computer readable copies submitted herewith are the same.
- B. ☐ the content of the computer readable copy submitted herewith is the same as the Sequence Listing appearing on pages __ to __ of the original specification as filed.
- C. ☐ this submission includes no new matter.

Respectfully submitted,



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SEQUENCE LISTING

<110> Watkins, Brynmor

<120> Materials and Methods for Detection and Treatment of
Breast Cancer

<130> MTP-024

<140>

<141>

<150> US 60/165,173

<151> 1999-11-16

<150> US 60/172,170

<151> 1999-12-17

<150> US 60/178,860

<151> 2000-01-27

<150> US 60/201,721

<151> 2000-05-03

<160> 23

<170> PatentIn Ver. 2.0

<210> 1

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<212> PRT

<213> Artificial Sequence

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1 5 10

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<210> 5
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<212> PRT
<213> Homo sapiens

<400> 5
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Gln Phe Gly His Val Val Asp Ile Val Ala Leu Lys Thr Met Lys Met
35 40 45

Arg Gly Gln Ala Phe Val Ile Phe Lys Glu Leu Gly Ser Ser Thr Asn
50 55 60

Ala Leu Arg Gln Leu Gln Gly Phe Pro Phe Tyr Gly Lys Pro Met Arg
65 70 75 80

Ile Gln Tyr Ala Lys Thr Asp Ser Asp Ile Ile Ser Lys Met Arg Gly
85 90 95

Thr Phe Ala Asp Lys Glu Lys Lys Lys Glu Lys Lys Lys Ala Lys Thr
100 105 110

Val Glu Gln Thr Ala Thr Thr Thr Asn Lys Lys Pro Gly Gln Gly Thr

115	120	125
Pro Asn Ser Ala Asn Thr Gln Gly Asn Ser Thr Pro Asn Pro Gln Val		
130	135	140
Pro Asp Tyr Pro Pro Asn Tyr Ile Leu Phe Leu Asn Asn Leu Pro Glu		
145	150	155 160
Glu Thr Asn Glu Met Met Leu Ser Met Leu Phe Asn Gln Phe Pro Gly		
	165 170	175
Phe Lys Glu Val Arg Leu Val Pro Gly Arg His Asp Ile Ala Phe Val		
	180 185	190
Glu Phe Glu Asn Asp Gly Gln Ala Gly Ala Ala Arg Asp Ala Leu Gln		
	195 200	205
Gly Phe Lys Ile Thr Pro Ser His Ala Met Lys Ile Thr Tyr Ala Lys		
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Lys
225

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<212> PRT
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Asp Ile Phe Ser Glu Val Gly Pro Val Val Ser Phe Arg
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Gly Ile Asp Ala Arg Gly Met Glu Ala Arg Ala Met Glu Ala Arg
1 5 10 15

<210> 14
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<212> PRT
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1 5 10 15

<210> 15
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<212> PRT
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1 5 10 15

<210> 16
<211> 15
<212> PRT
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<400> 16
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1 5 10 15

<210> 17
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<212> PRT
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Gly His Glu Ser Arg
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<210> 18

<211> 24

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence:tryptic peptide

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<211> 21

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence:tryptic peptide

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Gln Val Val Met Arg
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<210> 20

<211> 22

<212> PRT

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Pro Met Leu Asp Gln Arg

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			20					25					30			
Lys	Asp	Ile	Phe	Ser	Glu	Val	Gly	Pro	Val	Val	Ser	Phe	Arg	Leu	Val	
		35					40					45				
Tyr	Asp	Arg	Glu	Thr	Gly	Lys	Pro	Lys	Gly	Tyr	Gly	Phe	Cys	Glu	Tyr	
	50					55					60					
Gln	Asp	Gln	Glu	Thr	Ala	Leu	Ser	Ala	Met	Arg	Asn	Leu	Asn	Gly	Arg	
65					70					75					80	
Glu	Phe	Ser	Gly	Arg	Ala	Leu	Arg	Val	Asp	Asn	Ala	Ala	Ser	Glu	Lys	
				85					90					95		
Asn	Lys	Glu	Glu	Leu	Lys	Ser	Leu	Gly	Thr	Gly	Ala	Pro	Val	Ile	Glu	
		100						105					110			
Ser	Pro	Tyr	Gly	Glu	Thr	Ile	Ser	Pro	Glu	Asp	Ala	Pro	Glu	Ser	Ile	
		115					120					125				
Ser	Lys	Ala	Val	Ala	Ser	Leu	Pro	Pro	Glu	Gln	Met	Phe	Glu	Leu	Met	
		130				135					140					
Lys	Gln	Met	Lys	Leu	Cys	Val	Gln	Asn	Ser	Pro	Gln	Glu	Ala	Arg	Asn	
145					150					155					160	
Met	Leu	Leu	Gln	Asn	Pro	Gln	Leu	Ala	Tyr	Ala	Leu	Leu	Gln	Ala	Gln	
				165					170					175		

Val	Val	Met	Arg	Ile	Val	Asp	Pro	Glu	Ile	Ala	Leu	Lys	Ile	Leu	His			
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Arg	Gln	Thr	Asn	Ile	Pro	Thr	Leu	Ile	Ala	Gly	Asn	Pro	Gln	Pro	Val			
		195					200					205						
His	Gly	Ala	Gly	Pro	Gly	Ser	Gly	Ser	Asn	Val	Ser	Met	Asn	Gln	Gln			
	210					215					220							
Asn	Pro	Gln	Ala	Pro	Gln	Ala	Gln	Ser	Leu	Gly	Gly	Met	His	Val	Asn			
225					230					235					240			
Gly	Ala	Pro	Pro	Leu	Met	Gln	Ala	Ser	Met	Gln	Gly	Gly	Val	Pro	Ala			
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Pro	Gly	Gln	Met	Pro	Ala	Ala	Val	Thr	Gly	Pro	Gly	Pro	Gly	Ser	Leu			
			260					265					270					
Ala	Pro	Gly	Gly	Gly	Met	Gln	Ala	Gln	Val	Gly	Met	Pro	Gly	Ser	Gly			
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Pro	Val	Ser	Met	Glu	Arg	Gly	Gln	Val	Pro	Met	Gln	Asp	Pro	Arg	Ala			
	290					295					300							
Ala	Met	Gln	Arg	Gly	Ser	Leu	Pro	Ala	Asn	Val	Pro	Thr	Pro	Arg	Gly			
305					310					315					320			
Leu	Leu	Gly	Asp	Ala	Pro	Asn	Asp	Pro	Arg	Gly	Gly	Thr	Leu	Leu	Ser			
				325					330					335				
Val	Thr	Gly	Glu	Val	Glu	Pro	Arg	Gly	Tyr	Leu	Gly	Pro	Pro	His	Gln			
			340					345					350					
Gly	Pro	Pro	Met	His	His	Val	Pro	Gly	His	Glu	Ser	Arg	Gly	Pro	Pro			
		355					360					365						
Pro	His	Glu	Leu	Arg	Gly	Gly	Pro	Leu	Pro	Glu	Pro	Arg	Pro	Leu	Met			
	370					375					380							
Ala	Glu	Pro	Arg	Gly	Pro	Met	Leu	Asp	Gln	Arg	Gly	Pro	Pro	Leu	Asp			
385					390					395					400			
Gly	Arg	Gly	Gly	Arg	Asp	Pro	Arg	Gly	Ile	Asp	Ala	Arg	Gly	Met	Glu			
				405					410					415				
Ala	Arg	Ala	Met	Glu	Ala	Arg	Gly	Leu	Asp	Ala	Arg	Gly	Leu	Glu	Ala			
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Arg	Ala	Met	Glu	Ala	Arg	Ala	Met	Glu	Ala	Arg	Ala	Met	Glu	Ala	Arg			
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Ala	Met	Glu	Ala	Arg	Ala	Met	Glu	Val	Arg	Gly	Met	Glu	Ala	Arg	Gly			
	450					455					460							
Met	Asp	Thr	Arg	Gly	Pro	Val	Pro	Gly	Pro	Arg	Gly	Pro	Ile	Pro	Ser			
465					470					475					480			

Gly Met Gln Gly Pro Ser Pro Ile Asn Met Gly Ala Val Val Pro Gln
485 490 495

Gly Ser Arg Gln
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<210> 23
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<212> PRT
<213> Homo sapiens

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20 25 30

Lys Asp Ile Phe Ser Glu Val Gly Pro Val Val Ser Phe Arg Leu Val
35 40 45

Tyr Asp Arg Glu Thr Gly Lys Pro Lys Gly Tyr Gly Phe Cys Glu Tyr
50 55 60

Gln Asp Gln Glu Thr Ala Leu Ser Ala Met Arg Asn Leu Asn Gly Arg
65 70 75 80

Glu Phe Ser Gly Arg Ala Leu Arg Val Asp Asn Ala Ala Ser Glu Lys
85 90 95

Asn Lys Glu Glu Leu Lys Ser Leu Gly Thr Gly Ala Pro Val Ile Glu
100 105 110

Ser Pro Tyr Gly Glu Thr Ile Ser Pro Glu Asp Ala Pro Glu Ser Ile
115 120 125

Ser Lys Ala Val Ala Ser Leu Pro Pro Glu Gln Met Phe Glu Leu Met
130 135 140

Lys Gln Met Lys Leu Cys Val Gln Asn Ser Pro Gln Glu Ala Arg Asn
145 150 155 160

Met Leu Leu Gln Asn Pro Gln Leu Ala Tyr Ala Leu Leu Gln Ala Gln
165 170 175

Val Val Met Arg Ile Val Asp Pro Glu Ile Ala Leu Lys Ile Leu His
180 185 190

Arg Gln Thr Asn Ile Pro Thr Leu Ile Ala Gly Asn Pro Gln Pro Val
195 200 205

His Gly Ala Gly Pro Gly Ser Gly Ser Asn Val Ser Met Asn Gln Gln
210 215 220

Asn Pro Gln Ala Pro Gln Ala Gln Ser Leu Gly Gly Met His Val Asn

225		230		235		240
Gly Ala Pro Pro Leu Met Gln Ala Ser Met Gln Gly Gly Val Pro Ala						
	245			250		255
Pro Gly Gln Met Pro Ala Ala Val Thr Gly Pro Gly Pro Gly Ser Leu						
	260			265		270
Ala Pro Gly Gly Gly Met Gln Ala Gln Val Gly Met Pro Gly Ser Gly						
	275			280		285
Pro Val Ser Met Glu Arg Gly Gln Val Pro Met Gln Asp Pro Arg Ala						
	290			295		300
Ala Met Gln Arg Gly Ser Leu Pro Ala Asn Val Pro Thr Pro Arg Gly						
	305			310		315
Leu Leu Gly Asp Ala Pro Asn Asp Pro Arg Gly Gly Thr Leu Leu Ser						
	325			330		335
Val Thr Gly Glu Val Glu Pro Arg Gly Tyr Leu Gly Pro Pro His Gln						
	340			345		350
Gly Pro Pro Met His His Val Pro Gly His Glu Ser Arg Gly Pro Pro						
	355			360		365
Pro His Glu Leu Arg Gly Gly Pro Leu Pro Glu Pro Arg Pro Leu Met						
	370			375		380
Ala Glu Pro Arg Gly Pro Met Leu Asp Gln Arg Gly Pro Pro Leu Asp						
	385			390		395
Gly Arg Gly Gly Arg Asp Pro Arg Gly Ile Asp Ala Arg Gly Met Glu						
	405			410		415
Ala Arg Ala Met Glu Ala Arg Gly Leu Asp Ala Arg Gly Leu Glu Ala						
	420			425		430
Arg Ala Met Glu Ala Arg Ala Met Glu Ala Arg Ala Met Glu Ala Arg						
	435			440		445
Ala Met Glu Ala Arg Ala Met Glu Val Arg Gly Met Glu Ala Arg Gly						
	450			455		460
Met Asp Thr Arg Gly Pro Val Pro Gly Pro Arg Gly Pro Ile Pro Ser						
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Gly Met Gln Gly Pro Ser Pro Ile Asn Met Gly Ala Val Val Pro Gln						
	485			490		495
Gly Ser Arg Gln Val Pro Val Met Gln Gly Thr Gly Met Gln Gly Ala						
	500			505		510
Ser Ile Gln Gly Gly Ser Gln Pro Gly Gly Phe Ser Pro Gly Gln Asn						
	515			520		525
Gln Val Thr Pro Gln Asp His Glu Lys Ala Ala Leu Ile Met Gln Val						

540

Gln Ser Ile Leu Ile Leu Lys Glu Gln Ile Gln Lys Ser Thr Gly Ala
565 570 575

Pro